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<110> E. I. du Pont de Nemours and Company  
Pioneer Hi-Bred International, Inc.

<120> Auxin Transport Proteins

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<150> 60/133,040

<151> 1999-05-07

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Ile Gly Val Val Trp Ser Leu Val Ser Tyr Arg Trp Gly Ile Glu Met  
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Gly Met Ala Met Phe Ser Leu Gly Leu Phe Met Ala Leu Gln Pro Arg  
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Ile Ile Ala Cys Gly Asn Lys Leu Ala Ala Ile Ala Met Gly Val Arg  
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Phe Val Ala Gly Pro Ala Val Met Ala Ala Ala Ser Ile Ala Val Gly  
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Leu Arg Gly Val Leu Leu His Ile Ala Ile Val Gln Ala Ala Leu Pro  
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Gln Gly Ile Val Pro Phe Val Phe Ala Lys Glu Tyr Gly Val His Pro  
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Pro Ala Ile Val Leu Gln Ser Ile Ser Ile Leu Ser Asp Ala Gly Leu
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Gly Met Ala Met Phe Ser Leu Gly Leu Phe Met Ala Leu Gln Pro Arg
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Ile Ile Ala Cys Gly Asn Lys Val Ala Thr Phe Ala Met Ala Val Arg
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Leu Arg Gly Thr Leu Leu His Val Ala Ile Val Gln Ala Ala Leu Pro
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WO 00/68389

PCT/US00/12061

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 35 40 45  
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 Tyr Thr Met Asn Leu Arg Phe Ile Ala Ala Asp Thr Leu Gln Lys Leu  
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 Met Val Leu Ala Met Leu Thr Ala Trp Ser His Leu Ser Arg Arg Gly  
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 Ser Leu Glu Trp Thr Ile Thr Leu Phe Ser Leu Ser Thr Leu Pro Asn  
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 Thr Leu Val Met Gly Ile Pro Leu Leu Lys Gly Met Tyr Gly Asp Phe  
 115 120 125

Ser Gly Ser Leu Met Val Gln Ile Val Val Leu Gln Cys Ile Ile Trp  
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 Tyr Thr Leu Met Leu Phe Met Phe Glu Tyr Arg Gly Ala Arg Met Leu  
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 Val Asp Pro Asp Val Val Ser Leu Asp Gly Arg Arg Asp Ala Ile Glu  
 180 185 190  
 Thr Glu Ala Glu Val Lys Glu Asp Gly Arg Ile His Val Thr Val Arg  
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 Arg Ser Asn Ala Ser Arg Ser Asp Ile Tyr Ser Arg Arg Ser Met Gly  
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 Phe Ser Ser Thr Thr Pro Arg Pro Ser Asn Leu Thr Asn Ala Glu Ile  
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 Tyr Ser Leu Gln Ser Ser Arg Asn Pro Thr Pro Arg Gly Ser Ser Phe  
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 Asn His Asn Asp Phe Tyr Ser Met Val Gly Arg Ser Ser Asn Phe Gly  
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 Ala Ala Asp Ala Phe Gly Ile Arg Thr Gly Ala Thr Pro Arg Pro Ser  
 275 280 285  
 Asn Tyr Glu Asp Asp Ala Ser Lys Pro Lys Tyr Pro Leu Pro Val Val  
 290 295 300  
 Asn Ala Thr Ser Gly Ala Gly Ala Ala His Tyr Pro Ala Pro Asn Pro  
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 Ala Val Ala Ala Ala Pro Lys Gly Ala Arg Lys Ala Ala Thr Asn Gly  
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Xaa Xaa Thr Pro Asp Gln Cys Ser Gly Ile Asn Arg Phe Val Ala Leu  
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Phe Ala Val Pro Leu Leu Ser Phe His Phe Ile Ser Thr Asn Asp Pro  
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Phe Ala Met Asn Leu Arg Phe Leu Ala Val Asp Thr Leu Gln Lys Val  
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Ala Val Leu Ala Leu Leu Ala Leu Xaa Ser Xaa Ala Ala Ser Ser Xaa  
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Arg	Ala	Leu	Gly	Leu	Asp	Trp	Ser	Ile	Thr	Leu	Phe	Ser	Leu	Ser	Thr	
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 Asp Leu His Met Leu Val Trp Ser Ser Ser Ala Ser Pro Val Ser Glu  
 325 330 335  
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 Val Leu Ala Lys Gly Ala Gln Ala Tyr Asp Glu Tyr Gly Arg Asp Asp  
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 Tyr Ser Ser Arg Thr Lys Asn Gly Ser Gly Gly Ala Asp Lys Gly Gly  
 370 375 380  
 Pro Thr Leu Ser Lys Leu Gly Ser Asn Ser Thr Ala Gln Leu Tyr Pro  
 385 390 395 400  
 Lys Asp Asp Gly Glu Gly Arg Ala Ala Ala Val Ala Met Pro Pro Ala  
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 Val Ser Tyr Arg Trp Gly Ile Glu Met Pro Ala Ile Ile Ala Arg Ser  
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 Ile Ser Ile Leu Ser Asp Ala Gly Leu Gly Met Ala Met Phe Ser Leu  
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Gly	Leu	Phe	Met	Ala	Leu	Gln	Pro	Arg	Ile	Ile	Ala	Cys	Gly	Asn	Lys
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Ile	Ala	Ile	Val	Gln	Ala	Ala	Leu	Pro	Gln	Gly	Ile	Val	Pro	Phe	Val
			530				535						540		
Phe	Ala	Lys	Glu	Tyr	Gly	Val	His	Pro	Asp	Ile	Leu	Ser	Thr	Ala	Tyr
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 Gly Ile Val Thr Gly Ser Leu Gln Val Met Ser Arg Thr Gly Thr Gly  
 35 40 45

Met Ser Met Phe Ser Met Gly Leu Phe Met Gly Gln Gln Glu Arg Val  
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Ile Ala Cys Gly Ala Gly Leu Thr Ala Leu Gly Met Ala Leu Arg Phe  
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 20 25 30

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 35 40 45

Phe Ala Val Pro Leu Leu Ser Phe His Phe Ile Ser Thr Asn Asp Pro  
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 <212> PRT  
 <213> *Oryza sativa*

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 35 40 45  
 Phe Ala Val Pro Leu Leu Ser Phe His Phe Ile Ser Thr Asn Asp Pro  
 50 55 60  
 Tyr Ala Met Asn Leu Arg Phe Leu Ala Ala Asp Thr Leu Gln Lys Leu  
 65 70 75 80  
 Leu Val Leu Ala Gly Leu Ala Ala Trp Ser Arg Leu Pro Ser Arg Thr  
 85 90 95  
 Gly Ala Pro Arg Leu Asp Trp Ser Ile Thr Leu Phe Ser Leu Ser Thr  
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 Leu Pro Asn Thr Leu Val Met Gly Ile Pro Leu Leu Ile Ala Met Tyr  
 115 120 125

WO 00/68389

PCT/US00/12061

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Arg	Met	Leu	Ile	Ala	Asp	Gln	Phe	Pro	Asp	Thr	Ala	Ala	Ser	Ile	Val
				165					170					175	
Ser	Leu	His	Val	Asp	Pro	Asp	Val	Val	Ser	Leu	Glu	Gly	Gly	His	Ala
			180					185					190		
Glu	Thr	Glu	Ala	Glu	Val	Ala	Ala	Asp	Gly	Arg	Leu	His	Val	Thr	Val
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Arg	Arg	Ser	Ser	Val	Ser	Arg	Arg	Ser	Leu	Leu	Val	Thr	Pro	Arg	Pro
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Ser	Asn	Leu	Thr	Gly	Ala	Glu	Ile	Tyr	Ser	Leu	Ser	Ser	Ser	Arg	Asn
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Pro	Thr	Pro	Arg	Gly	Ser	Asn	Phe	Asn	His	Ala	Asp	Phe	Phe	Ala	Met
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Val	Gly	Gly	Gly	Pro	Pro	Pro	Pro	Thr	Pro	Ala	Ala	Val	Arg	Gly	Ser
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Ser	Phe	Gly	Ala	Ser	Glu	Leu	Tyr	Ser	Leu	Gln	Ser	Ser	Arg	Gly	Pro
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Thr	Pro	Arg	Gln	Ser	Asn	Phe	Asp	Glu	His	Ser	Ala	Arg	Pro	Pro	Lys
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Pro	Pro	Ala	Thr	Thr	Thr	Gly	Ala	Leu	Asn	His	Asp	Ala	Lys	Glu	Leu
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His	Met	Phe	Val	Trp	Ser	Ser	Ser	Ala	Ser	Pro	Val	Ser	Glu	Val	Ser
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Gly	Gly	Gly	Gly	Gly	Glu	Asn	Phe	Ser	Phe	Gly	Gly	Gly	Lys	Thr	Val
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Asp	Gly	Ala	Glu	Ala	Val	Asp	Glu	Glu	Ala	Ala	Leu	Pro	Asp	Gly	Leu
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Thr	Lys	Met	Gly	Ser	Ser	Ser	Thr	Ala	Glu	Leu	His	Pro	Lys	Val	Val
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Asp	Val	Asp	Gly	Pro	Asn	Ala	Gly	Gly	Gly	Ala	Ala	Gly	Ala	Gly	Gln
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Tyr Gln Met Pro Pro Ala Ser Val Met Thr Arg Leu Ile Leu Ile Met  
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 Val Trp Arg Lys Leu Ile Arg Asn Pro Asn Thr Tyr Ser Ser Leu Leu  
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 Gly Leu Ala Trp Ser Leu Val Ala Phe Arg Leu Phe Met Ala Leu Gln  
 485 490 495  
 Pro Ser Ile Ile Ala Cys Gly Lys Ser Ala Ala Val Val Ser Met Ala  
 500 505 510  
 Val Arg Phe Leu Ala Gly Pro Ala Val Met Ala Ala Ala Ser Ile Ala  
 515 520 525  
 Ile Gly Leu Arg Gly Thr Leu Leu His Val Ala Ile Val Gln Ala Ala  
 530 535 540  
 Leu Pro Gln Gly Ile Val Pro Phe Val Phe Ala Lys Glu Tyr Asn Val  
 545 550 555 560  
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Thr Asp Ala Gln Ile Lys Glu Asp Gly Lys Leu His Val Thr Val Arg
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Lys Ser Asn Ala Ser Arg Ser Asp Ile Phe Ser Arg Arg Ser Gln Gly
      50              55              60

Phe Ser Ser Thr Thr Pro Arg Pro Ser Asn Leu Thr Asn Ala Glu Ile
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Tyr Ser Leu Gln Ser Ser Arg Asn Pro Thr Pro Arg Gly Ser Ser Phe
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Asn His Thr Asp Phe Tyr Ser Met Met Ala Ala Gly Arg Asn Ser Asn
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Phe Gly Ala Asn Asp Val Tyr Gly Leu Ser Ala Ser Arg Gly Pro Thr
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Pro Arg Pro Ser Asn Tyr Asp Glu Asp Ala Ser Asn Asn Asn Asn Gly
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Lys Pro Arg Tyr His Tyr Pro Ala Ala Gly Thr Gly Thr Gly Thr Gly
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Thr Gly Thr Gly Thr Gly Thr Gly His Tyr Pro Ala Pro Asn Pro Gly
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Met Phe Ser Pro Thr Ala Ser Lys Asn Val Ala Lys Lys Pro Asp Asp
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Pro Asn Lys Asp Leu His Met Phe Val Trp Ser Ser Ser Ala Ser Pro
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Lys Leu Thr Val Ser Pro Gly Lys Val Glu Gly Asn Ile Asn Arg Asp
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Thr Gln Glu Glu Tyr Gln Pro Glu Lys Asp Glu Phe Ser Phe Gly Asn
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Arg Gly Ile Glu Asp Glu His Glu Gly Glu Lys Val Gly Asn Gly Asn
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Pro Lys Thr Met Pro Pro Ala Ser Val Met Thr Arg Leu Ile Leu Ile
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Pro Ala Ile Ile Ala Lys Ser Ile Ser Ile Leu Ser Asp Ala Gly Leu  
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Gly Met Ala Met Phe Ser Leu Gly Leu Phe Met Ala Leu Gln Pro Arg  
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Ile Ile Ala Cys Gly Asn Ser Thr Ala Ala Phe Ser Met Ala Val Arg  
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Phe Leu Thr Gly Pro Ala Val Met Ala Ala Ala Ser Ile Ala Val Gly  
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Leu Lys Gly Val Leu Leu His Val Ala Ile Val Gln Ala Ala Leu Pro  
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Gln Gly Ile Val Pro Phe Val Phe Ala Lys Glu Tyr Asn Val His Pro  
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Ile Thr Leu Val Tyr Tyr Ile Leu Leu Gly Leu  
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 <211> 531  
 <212> DNA  
 <213> Glycine max

<220>  
 <221> unsure  
 <222> (530)

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<210> 24  
 <211> 90  
 <212> PRT  
 <213> Glycine max

<220>  
 <221> UNSURE  
 <222> (33)

&lt;220&gt;

&lt;221&gt; UNSURE

&lt;222&gt; (78)

&lt;400&gt; 24

Met Ile Thr Trp Lys Asp Leu Tyr Thr Val Leu Thr Ala Val Val Pro  
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Leu Tyr Val Ala Met Ile Leu Ala Tyr Gly Ser Val Arg Trp Trp Lys  
 20 25 30

Xaa Ile Phe Ser Pro Asp Gln Cys Ser Gly Ile Asn Arg Phe Val Ala  
 35 40 45

Ile Phe Ala Val Pro Leu Leu Ser Phe His Phe Ile Ser Thr Asn Asn  
 50 55 60

Pro Tyr Ala Met Asn Phe Arg Phe Ile Arg Arg Arg Thr Xaa Thr Ser  
 65 70 75 80

Lys Lys Ile Ile Met Leu Phe Ala Leu Ala  
 85 90

&lt;210&gt; 25

&lt;211&gt; 2101

&lt;212&gt; DNA

&lt;213&gt; Glycine max

&lt;400&gt; 25

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 a 2101

<210> 26  
 <211> 540  
 <212> PRT  
 <213> Glycine max

<400> 26

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			20					25					30		
Ile	Phe	Ser	Pro	Asp	Gln	Cys	Ser	Gly	Ile	Asn	Arg	Phe	Val	Ala	Ile
		35					40					45			
Phe	Ala	Val	Pro	Leu	Leu	Ser	Phe	His	Phe	Ile	Ser	Thr	Asn	Asn	Pro
	50					55					60				
Tyr	Ala	Met	Asn	Phe	Arg	Phe	Ile	Ala	Ala	Asp	Thr	Leu	Gln	Lys	Ile
65					70					75					80
Ile	Met	Leu	Phe	Ala	Leu	Ala	Ile	Trp	Thr	Asn	Leu	Thr	Lys	Thr	Gly
				85					90					95	
Ser	Leu	Glu	Trp	Met	Ile	Thr	Ile	Phe	Ser	Leu	Ser	Thr	Leu	Pro	Asn
			100					105					110		
Thr	Leu	Val	Met	Gly	Ile	Pro	Leu	Leu	Ile	Ala	Met	Tyr	Gly	Asp	Tyr
		115					120					125			
Ser	Gly	Ser	Leu	Met	Val	Gln	Val	Val	Val	Leu	Gln	Cys	Ile	Ile	Trp
	130					135					140				
Tyr	Thr	Leu	Leu	Leu	Phe	Leu	Phe	Glu	Tyr	Arg	Ala	Ala	Lys	Ile	Leu
145					150					155					160
Ile	Met	Glu	Gln	Phe	Pro	Glu	Thr	Ala	Ala	Ser	Ile	Val	Ser	Phe	Lys
				165					170					175	
Val	Asp	Ser	Asp	Val	Val	Ser	Leu	Asp	Gly	Arg	Asp	Phe	Leu	Glu	Thr
			180					185					190		
Asp	Ala	Glu	Val	Gly	Asp	Asp	Gly	Lys	Leu	His	Val	Thr	Val	Arg	Lys
		195					200					205			
Ser	Asn	Ala	Ser	Arg	Arg	Ser	Phe	Met	Met	Thr	Pro	Arg	Pro	Ser	Asn
	210					215					220				
Leu	Thr	Gly	Ala	Glu	Ile	Tyr	Ser	Leu	Ser	Ser	Ser	Arg	Asn	Pro	Thr
225					230					235					240
Pro	Arg	Gly	Ser	Asn	Phe	Asn	His	Ala	Asp	Phe	Phe	Ser	Met	Met	Gly
				245					250					255	

Tyr Gln Pro Arg His Ser Asn Phe Thr Ala Asn Asp Leu Phe Ser Ser  
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 Arg Gly Pro Thr Pro Arg Pro Ser Asn Phe Glu Glu Pro Ser Met Pro  
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 Gln Ala Val Thr Val Ala Ser Pro Arg Phe Gly Phe Tyr Pro Ser Gln  
 290 295 300  
 Thr Val Pro Ala Ser Tyr Pro Pro Pro Asn Pro Asp Phe Ser Ser Ala  
 305 310 315 320  
 Thr Lys Asn Leu Lys Asn Gln Ser Gln Asn Gln Asn Pro Asn Gln Ser  
 325 330 335  
 Gln Ser Gln Asn Ser Gln Ala Pro Ala Lys Gly Ala His Asp Ala Lys  
 340 345 350  
 Glu Leu His Met Phe Val Trp Ser Ser Ser Ala Ser Pro Met Ser Glu  
 355 360 365  
 Asn Ala Gly Leu Asn Val Phe Ser Ser Thr Asp Leu Gly Thr Ser Glu  
 370 375 380  
 Gln Pro Asp Gln Gly Ala Lys Glu Ile Arg Met Leu Val Ala Asp Asn  
 385 390 395 400  
 Asn Ala His Leu Arg Asn Gly Glu Ala Asn Asn Lys Gly Gly Leu Glu  
 405 410 415  
 Ala Val Leu Gly Val Glu Asp Phe Lys Phe Leu Val Asn Gly Glu Glu  
 420 425 430  
 Gln Val Gly Glu Glu Lys Glu Gly Leu Asn Asn Gly Leu Asn Lys Leu  
 435 440 445  
 Gly Ser Ser Ser Thr Val Glu Leu Gln Pro Lys Ala Thr Val Ala Gly  
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 Glu Ala Ser Ala Gly Lys His Met Pro Pro Ala Asn Val Met Thr Arg  
 465 470 475 480  
 Leu Ile Leu Ile Met Val Trp Arg Lys Leu Ile Arg Asn Pro Asn Thr  
 485 490 495  
 Tyr Ser Ser Leu Ile Gly Val Val Trp Ser Leu Val Ala Phe Arg Trp  
 500 505 510  
 His Val His Met Pro Lys Ile Ile Glu Lys Ser Ile Ser Ile Leu Ser  
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 Asp Ala Gly Leu Gly Met Ala Met Phe Ser Leu Gly  
 530 535 540

<210> 27  
 <211> 525  
 <212> DNA  
 <213> Glycine max



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<400> 27
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<210> 28
<211> 64
<212> PRT
<213> Glycine max

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<220>
<221> UNSURE
<222> (38)

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<400> 28
Met Ile Thr Leu Thr Asp Phe Tyr His Val Met Thr Ala Met Val Pro
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Leu Tyr Val Ala Met Ile Leu Ala Tyr Gly Ser Val Lys Trp Trp Lys
          20             25             30
Ile Phe Ser Pro Asp Xaa Cys Ser Gly Ile Asn Arg Phe Val Ala Leu
          35             40             45
Phe Ala Val Pro Leu Leu Ser Phe His Phe Ile Ala Ser Asn Asn Pro
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<210> 29
<211> 2549
<212> DNA
<213> Glycine max

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<210> 30  
 <211> 605  
 <212> PRT  
 <213> Glycine max

<400> 30  
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 Ile Phe Ser Pro Asp Gln Cys Ser Gly Ile Asn Arg Phe Val Ala Leu  
 35 40 45  
 Phe Ala Val Pro Leu Leu Ser Phe His Phe Ile Ala Ser Asn Asn Pro  
 50 55 60  
 Tyr Glu Met Asn Leu Arg Phe Leu Ala Ala Asp Thr Leu Gln Lys Ile  
 65 70 75 80  
 Ile Ile Leu Val Leu Leu Ala Val Trp Ser Asn Ile Thr Lys Arg Gly  
 85 90 95  
 Cys Leu Glu Trp Ala Ile Thr Leu Phe Ser Leu Ser Thr Leu Pro Asn  
 100 105 110  
 Thr Leu Val Met Gly Ile Pro Leu Leu Lys Gly Met Tyr Gly Asp Phe  
 115 120 125  
 Ser Gly Ser Leu Met Val Gln Ile Val Val Leu Gln Cys Ile Ile Trp  
 130 135 140  
 Tyr Thr Leu Met Leu Phe Leu Phe Glu Phe Arg Gly Ala Arg Met Leu  
 145 150 155 160

Ile Ser Glu Gln Phe Pro Asp Thr Ala Ala Ser Ile Val Ser Ile His  
 165 170 175  
 Val Asp Ser Asp Val Met Ser Leu Asp Gly Arg Gln Pro Leu Glu Thr  
 180 185 190  
 Glu Ala Glu Ile Lys Glu Asp Gly Lys Leu His Val Thr Val Arg Lys  
 195 200 205  
 Ser Asn Ala Ser Arg Ser Asp Ile Phe Ser Arg Arg Ser Gln Gly Leu  
 210 215 220  
 Ser Ser Thr Thr Pro Arg Pro Ser Asn Leu Thr Asn Ala Glu Ile Tyr  
 225 230 235 240  
 Ser Leu Gln Ser Ser Arg Asn Pro Thr Pro Arg Gly Ser Ser Phe Asn  
 245 250 255  
 His Thr Asp Phe Tyr Ser Met Met Ala Ala Gly Gly Arg Asn Ser Asn  
 260 265 270  
 Phe Gly Ala Ser Asp Val Tyr Gly Leu Ser Ala Ser Arg Gly Pro Thr  
 275 280 285  
 Pro Arg Pro Ser Asn Tyr Asp Glu Asp Gly Gly Lys Pro Lys Phe His  
 290 295 300  
 Tyr His Ala Ala Gly Gly Thr Gly His Tyr Pro Ala Pro Asn Pro Gly  
 305 310 315 320  
 Met Phe Ser Pro Ser Asn Gly Ser Lys Ser Val Ala Ala Asn Ala Asn  
 325 330 335  
 Ala Lys Arg Pro Asn Gly Gln Ala Gln Leu Lys Pro Glu Asp Gly Asn  
 340 345 350  
 Arg Asp Leu His Met Phe Val Trp Ser Ser Ser Ala Ser Pro Val Ser  
 355 360 365  
 Asp Val Phe Gly Ala His Glu Tyr Gly Gly Gly His Asp Gln Lys Glu  
 370 375 380  
 Val Lys Leu Asn Val Ser Pro Gly Lys Val Glu Asn Asn His Arg Asp  
 385 390 395 400  
 Thr Gln Glu Asp Tyr Leu Glu Lys Asp Glu Phe Ser Phe Gly Asn Arg  
 405 410 415  
 Glu Met Asp Arg Glu Met Asn Gln Leu Glu Gly Glu Lys Val Gly Asp  
 420 425 430  
 Gly Lys Pro Lys Thr Met Pro Pro Ala Ser Val Met Thr Arg Leu Ile  
 435 440 445  
 Leu Ile Met Val Trp Arg Lys Leu Ile Arg Asn Pro Asn Thr Tyr Ser  
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 Ser Leu Ile Gly Leu Thr Trp Ser Leu Val Ser Phe Lys Trp Asn Val  
 465 470 475 480



<220>  
 <221> UNSURE  
 <222> (32)

<220>  
 <221> UNSURE  
 <222> (64)

<400> 32

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Leu Tyr Val Ala Met Ile Leu Ser Xaa Tyr Gly Ser Val Arg Trp Xaa  
 20 25 30

Lys Ile Phe Thr Pro Asp Gln Cys Ser Gly Ile Asn Arg Phe Val Ala  
 35 40 45

Val Phe Ala Val Pro Leu Leu Ser Phe His Phe Ile Ser Ser Asn Xaa  
 50 55 60

Pro Tyr Ala Met Asn Tyr His Phe Ile Ala Ala Asp Cys Leu Gln Lys  
 65 70 75 80

Val Val Ile Leu

<210> 33  
 <211> 2324  
 <212> DNA  
 <213> Glycine max

<400> 33

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aatagaaaaa gaagtatatg ttgctataac tgtacgtact atgtaaacc aatgtcacgc 2160
tcaagcgggg tggatgaagg gaaatgtaga agatattgga ttttagatgt tagagggaaa 2220
gagaaattat atatagtata cggtagaatg ctatatatat taattattta tgattcatat 2280
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<210> 34  
 <211> 637  
 <212> PRT  
 <213> Glycine max

<400> 34

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Ile Phe Thr Pro Asp Gln Cys Ser Gly Ile Asn Arg Phe Val Ala Val  
 35 40 45

Phe Ala Val Pro Leu Leu Ser Phe His Phe Ile Ser Ser Asn Asp Pro  
 50 55 60

Tyr Ala Met Asn Tyr His Phe Ile Ala Ala Asp Cys Leu Gln Lys Val  
 65 70 75 80

Val Ile Leu Gly Ala Leu Phe Leu Trp Asn Thr Phe Thr Lys His Gly  
 85 90 95

Ser Leu Asp Trp Thr Ile Thr Leu Phe Ser Leu Ser Thr Leu Pro Asn  
 100 105 110

Thr Leu Val Met Gly Ile Pro Leu Leu Lys Ala Met Tyr Gly Asp Phe  
 115 120 125

Ser Gly Ser Leu Met Val Gln Ile Val Val Leu Gln Ser Val Ile Trp  
 130 135 140

Tyr Thr Leu Met Leu Phe Met Phe Glu Tyr Arg Gly Ala Lys Leu Leu  
 145 150 155 160

Ile Thr Glu Gln Phe Pro Glu Thr Ala Gly Ser Ile Thr Ser Phe Arg  
 165 170 175

Val Asp Ser Asp Val Val Ser Leu Asn Gly Arg Glu Pro Leu Gln Thr  
 180 185 190

Asp Ala Glu Ile Gly Glu Asp Gly Lys Leu His Val Val Val Lys Arg  
 195 200 205

Ser Ala Ala Ser Ser Met Ile Ser Ser Phe Asn Lys Ser His Leu Thr  
 210 215 220

Ser Met Thr Pro Arg Ala Ser Asn Leu Thr Gly Val Glu Ile Tyr Ser  
 225 230 235 240  
 Val Gln Ser Ser Arg Glu Pro Thr Pro Arg Gly Ser Ser Phe Asn Gln  
 245 250 255  
 Thr Asp Phe Tyr Ala Met Phe Ala Ser Lys Ala Pro Ser Pro Lys His  
 260 265 270  
 Gly Tyr Thr Asn Ser Phe Gln Ser Asn Asn Gly Gly Ile Gly Asp Val  
 275 280 285  
 Tyr Ser Leu Gln Ser Ser Lys Gly Ala Thr Pro Arg Thr Ser Asn Phe  
 290 295 300  
 Glu Glu Glu Met Leu Lys Met His Lys Lys Arg Gly Gly Arg Ser Met  
 305 310 315 320  
 Ser Gly Glu Leu Phe Asn Gly Gly Leu Val Ser Ser Asn Tyr Pro Pro  
 325 330 335  
 Pro Asn Pro Met Phe Ser Gly Ser Thr Ser Ala Ala Gly Gly Pro Lys  
 340 345 350  
 Lys Lys Asp Ser Ser Gly Gly Gly Gly Ala Val Ala Pro Asn Lys Glu  
 355 360 365  
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 370 375 380  
 Asn Leu Arg His Ala Val Asn Arg Ala Ala Ser Thr Asp Phe Gly Thr  
 385 390 395 400  
 Val Asp Pro Ser Lys Ala Val Pro His Glu Thr Val Ala Ser Lys Ala  
 405 410 415  
 Val His Glu Leu Ile Glu Asn Met Ser Pro Gly Arg Arg Gly Ser Gly  
 420 425 430  
 Glu Arg Glu Pro Glu Met Asp Glu Gly Ala Lys Ile Pro Ala Ser Gly  
 435 440 445  
 Ser Pro Tyr Thr Cys Gln Lys Lys Val Asp Met Glu Asp Gly Asn Ala  
 450 455 460  
 Asn Lys Asn Gln Gln Met Pro Pro Ala Ser Val Met Thr Arg Leu Ile  
 465 470 475 480  
 Leu Ile Met Val Trp Arg Lys Leu Ile Arg Asn Pro Asn Thr Tyr Ser  
 485 490 495  
 Ser Leu Leu Gly Leu Thr Trp Ser Leu Ile Ser Phe Arg Trp His Ile  
 500 505 510  
 Glu Met Pro Thr Ile Val Lys Gly Ser Ile Ser Ile Leu Ser Asp Ala  
 515 520 525  
 Gly Leu Gly Met Ala Met Phe Ser Leu Gly Leu Phe Met Ala Leu Gln  
 530 535 540

Pro Lys Ile Ile Ala Cys Gly Lys Ser Val Ala Ala Phe Ser Met Ala  
 545 550 555 560

Val Arg Phe Leu Thr Gly Pro Ala Val Ile Ala Ala Thr Ser Ile Gly  
 565 570 575

Ile Gly Leu Arg Gly Val Leu Leu His Val Ala Ile Val Gln Ala Ala  
 580 585 590

Leu Pro Gln Gly Ile Val Pro Phe Val Phe Ala Lys Glu Tyr Asn Leu  
 595 600 605

His Ala Asp Ile Leu Ser Thr Ala Val Ile Phe Gly Met Leu Ile Ala  
 610 615 620

Leu Pro Ile Thr Ile Leu Tyr Tyr Val Leu Leu Gly Val  
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 <212> DNA  
 <213> Triticum aestivum

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&lt;221&gt; unsure

&lt;222&gt; (333)

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&lt;221&gt; unsure

&lt;222&gt; (336)

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&lt;221&gt; unsure

&lt;222&gt; (347)

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&lt;222&gt; (360)

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&lt;221&gt; unsure

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&lt;221&gt; unsure

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&lt;220&gt;

&lt;221&gt; unsure

&lt;222&gt; (441)

&lt;400&gt; 35

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gncatgttca tggcgtagcg gtcggtgcgg tgggtggggca tcttcacgcc ggaccantgc 180
tcgggcatca aacgcttcgt ngccgtcttc gcggtggcgc tcctctcctt ccacttcate 240
tccaccaacg aaccctacgc catggactaa cgcttcctgg gcgccgactc gctgcanaan 300
ntcgttatcc tcgccgncct cgccgtgtgg ganaangtgc tctcccncca acggtgcecn 360

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WO 00/68389

PCT/US00/12061

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<210> 36  
 <211> 89  
 <212> PRT  
 <213> Triticum aestivum

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 <222> (85)

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Leu Tyr Val Xaa Met Phe Met Ala Tyr Gly Ser Val Arg Trp Trp Gly  
 20 25 30

Ile Phe Thr Pro Asp Xaa Cys Ser Gly Ile Lys Arg Phe Val Ala Val  
 35 40 45

Phe Ala Val Ala Leu Leu Ser Phe His Phe Ile Ser Thr Asn Glu Pro  
 50 55 60

Tyr Ala Met Asp Xaa Arg Phe Leu Gly Ala Asp Ser Leu Xaa Xaa Xaa  
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Val Ile Leu Ala Xaa Leu Ala Val Trp  
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<210> 37  
 <211> 2293  
 <212> DNA  
 <213> Triticum aestivum

<400> 37  
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 cgccgcgtcc accgacttcg ccgccgcacc gccggcgcca gccacgccac gagacggcgc 1260  
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 catcatggtg tggcgcaagc tcatccgcaa cccaacacc tactccagcc tcatcgccct 1560  
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 aaggatagg agaactaagt aggaccctag acaggaattc aaaggacaga taaagatatc 2160  
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 <211> 632  
 <212> PRT  
 <213> Triticum aestivum

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 20 25 30  
 Ile Phe Thr Pro Asp Gln Cys Ser Gly Ile Asn Arg Phe Val Ala Val  
 35 40 45  
 Phe Ala Val Pro Leu Leu Ser Phe His Phe Ile Ser Thr Asn Asp Pro  
 50 55 60

Tyr Ala Met Asp Tyr Arg Phe Leu Ala Ala Asp Ser Leu Gln Lys Leu  
 65 70 75 80  
 Val Ile Leu Ala Ala Leu Ala Val Trp His Asn Val Leu Ser Arg Tyr  
 85 90 95  
 Arg Cys Arg Gly Gly Thr Glu Ala Gly Glu Ala Ser Ser Leu Asp Trp  
 100 105 110  
 Thr Ile Thr Leu Phe Ser Leu Ala Thr Leu Pro Asn Thr Leu Val Met  
 115 120 125  
 Gly Ile Pro Leu Leu Arg Ala Met Tyr Gly Asp Phe Ser Gly Ser Leu  
 130 135 140  
 Met Val Gln Ile Val Val Leu Gln Ser Val Ile Trp Tyr Thr Leu Met  
 145 150 155 160  
 Leu Phe Leu Phe Glu Tyr Arg Gly Ala Lys Ala Leu Ile Ser Glu Gln  
 165 170 175  
 Phe Pro Pro Asp Val Gly Ala Ser Ile Ala Ser Phe Arg Val Asp Ser  
 180 185 190  
 Asp Val Val Ser Leu Asn Gly Arg Glu Ala Leu His Ala Asp Ala Glu  
 195 200 205  
 Val Gly Arg Asp Gly Arg Val His Val Val Ile Arg Arg Ser Ala Ser  
 210 215 220  
 Gly Ser Thr Thr Gly Gly His Gly Ala Gly Arg Ser Gly Ile Tyr Arg  
 225 230 235 240  
 Gly Ala Ser Asn Ala Met Thr Pro Arg Ala Ser Asn Leu Thr Gly Val  
 245 250 255  
 Glu Ile Tyr Ser Leu Gln Thr Ser Arg Glu Pro Thr Pro Arg Gln Ser  
 260 265 270  
 Ser Phe Asn Gln Ser Asp Phe Tyr Ser Met Phe Asn Gly Ser Lys Leu  
 275 280 285  
 Ala Ser Pro Lys Gly Gln Pro Pro Val Ala Gly Gly Gly Gly Ala Arg  
 290 295 300  
 Gly Gln Gly Leu Asp Glu Gln Val Ala Asn Lys Phe Lys Gly Gly Glu  
 305 310 315 320  
 Ala Ala Ala Pro Tyr Pro Ala Pro Asn Pro Gly Met Met Met Pro Ala  
 325 330 335  
 Pro Arg Lys Lys Glu Leu Gly Gly Ser Asn Ser Asn Ser Asp Lys Glu  
 340 345 350  
 Leu His Met Phe Val Trp Ser Ser Ser Ala Ser Pro Val Ser Glu Ala  
 355 360 365  
 Asn Leu Arg Asn Ala Val Asn His Ala Ala Ser Thr Asp Phe Ala Ala  
 370 375 380

Ala Pro Pro Ala Ala Ala Thr Pro Arg Asp Gly Ala Thr Pro Arg Gly  
 385 390 395 400  
 Val Ser Gly Ser Val Thr Pro Val Met Lys Lys Asp Ala Ser Ser Gly  
 405 410 415  
 Ala Val Glu Val Glu Ile Glu Asp Gly Met Met Lys Ser Pro Ala Thr  
 420 425 430  
 Gly Leu Gly Ala Lys Phe Pro Val Ser Gly Ser Pro Tyr Val Ala Pro  
 435 440 445  
 Arg Lys Lys Gly Ala Asp Val Pro Gly Leu Glu Glu Ala Ala His Pro  
 450 455 460  
 Met Pro Pro Ala Ser Val Met Thr Arg Leu Ile Leu Ile Met Val Trp  
 465 470 475 480  
 Arg Lys Leu Ile Arg Asn Pro Asn Thr Tyr Ser Ser Leu Ile Gly Leu  
 485 490 495  
 Val Trp Ser Leu Val Ser Phe Arg Trp Asn Ile Gln Met Pro Thr Ile  
 500 505 510  
 Ile Lys Gly Ser Ile Ser Ile Leu Ser Asp Ala Gly Leu Gly Met Ala  
 515 520 525  
 Met Phe Ser Leu Gly Leu Phe Met Ala Leu Gln Pro Lys Ile Ile Ser  
 530 535 540  
 Cys Gly Lys Ser Val Ala Thr Phe Ala Met Ala Val Arg Phe Leu Thr  
 545 550 555 560  
 Gly Pro Ala Val Ile Ala Ala Thr Ser Ile Ala Val Gly Leu Arg Gly  
 565 570 575  
 Val Leu Leu His Val Ala Ile Val Gln Ala Ala Leu Pro Gln Gly Ile  
 580 585 590  
 Val Pro Phe Val Phe Ala Lys Glu Tyr Asn Cys His Pro Gln Ile Leu  
 595 600 605  
 Ser Thr Ala Val Ile Phe Gly Met Leu Val Ala Leu Pro Ile Thr Ile  
 610 615 620  
 Leu Tyr Tyr Val Leu Leu Gly Ile  
 625 630

<210> 39  
 <211> 447  
 <212> DNA  
 <213> Triticum aestivum

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 cgatgggtggc ggttctttcac ggccgagcag tgcggcgcca tcaacacgct ggtggtctgc 180  
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 tgggcgcgct gcgccaaggc caaggccggc gcctactcgt ggtcatcacg gggttctccc 360  
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 naattggggg gcanggactt tattttt 447

<210> 40  
 <211> 94  
 <212> PRT  
 <213> Triticum aestivum

<400> 40  
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 Phe Phe Thr Ala Glu Gln Cys Gly Ala Ile Asn Thr Leu Val Val Cys  
 35 40 45  
 Phe Ser Met Pro Phe Phe Thr Phe Asp Phe Val Val Arg Ala Asp Pro  
 50 55 60  
 Tyr Ala Met Asn Tyr Arg Val Ile Ala Ala Asp Ala Val Ala Lys Leu  
 65 70 75 80  
 Leu Ala Val Leu Ala Ala Ala Val Trp Ala Arg Cys Ala Lys  
 85 90

<210> 41  
 <211> 415  
 <212> DNA  
 <213> Triticum aestivum

<400> 41  
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 cgggcaagat gatcacgggc acggacttct accacgtgat gacggcggtg gtgccgctgt 180

acgtggccat gatcctcgcc tacggctccg tcaagtgggtg gggcatcttc acgccggacc 240  
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 tcatctccac caacaacccc tacaccatga acctgcgctt catcgccgcc gacacgctgc 360  
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<210> 42  
 <211> 91  
 <212> PRT  
 <213> *Triticum aestivum*

<400> 42  
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 Ile Phe Thr Pro Asp Gln Cys Ser Gly Ile Asn Arg Phe Val Ala Leu  
 35 40 45  
 Phe Ala Val Pro Leu Leu Ser Phe His Phe Ile Ser Thr Asn Asn Pro  
 50 55 60  
 Tyr Thr Met Asn Leu Arg Phe Ile Ala Ala Asp Thr Leu Gln Lys Leu  
 65 70 75 80  
 Met Met Leu Ala Met Leu Asn Ala Trp Ser Asn  
 85 90

<210> 43  
 <211> 647  
 <212> PRT  
 <213> *Arabidopsis thaliana*

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 20 25 30  
 Ile Phe Thr Pro Asp Gln Cys Ser Gly Ile Asn Arg Phe Val Ala Val  
 35 40 45  
 Phe Ala Val Pro Leu Leu Ser Phe His Phe Ile Ser Ser Asn Asp Pro  
 50 55 60  
 Tyr Ala Met Asn Tyr His Phe Leu Ala Ala Asp Ser Leu Gln Lys Val  
 65 70 75 80  
 Val Ile Leu Ala Ala Leu Phe Leu Trp Gln Ala Phe Ser Arg Arg Gly  
 85 90 95  
 Ser Leu Glu Trp Met Ile Thr Leu Phe Ser Leu Ser Thr Leu Pro Asn  
 100 105 110  
 Thr Leu Val Met Gly Ile Pro Leu Leu Arg Ala Met Tyr Gly Asp Phe  
 115 120 125

Ser Gly Asn Leu Met Val Gln Ile Val Val Leu Gln Ser Ile Ile Trp  
 130 135 140  
 Tyr Thr Leu Met Leu Phe Leu Phe Glu Phe Arg Gly Ala Lys Leu Leu  
 145 150 155 160  
 Ile Ser Glu Gln Phe Pro Glu Thr Ala Gly Ser Ile Thr Ser Phe Arg  
 165 170 175  
 Val Asp Ser Asp Val Ile Ser Leu Asn Gly Arg Glu Pro Leu Gln Thr  
 180 185 190  
 Asp Ala Glu Ile Gly Asp Asp Gly Lys Leu His Val Val Val Arg Arg  
 195 200 205  
 Ser Ser Ala Ala Ser Ser Met Ile Ser Ser Phe Asn Lys Ser His Gly  
 210 215 220  
 Gly Gly Leu Asn Ser Ser Met Ile Thr Pro Arg Ala Ser Asn Leu Thr  
 225 230 235 240  
 Gly Val Glu Ile Tyr Ser Val Gln Ser Ser Arg Glu Pro Thr Pro Arg  
 245 250 255  
 Ala Ser Ser Phe Asn Gln Thr Asp Phe Tyr Ala Met Phe Asn Ala Ser  
 260 265 270  
 Lys Ala Pro Ser Pro Arg His Gly Tyr Thr Asn Ser Tyr Gly Gly Ala  
 275 280 285  
 Gly Ala Gly Pro Gly Gly Asp Val Tyr Ser Leu Gln Ser Ser Lys Gly  
 290 295 300  
 Val Thr Pro Arg Thr Ser Asn Phe Asp Glu Glu Val Met Lys Thr Ala  
 305 310 315 320  
 Lys Lys Ala Gly Arg Gly Gly Arg Ser Met Ser Gly Glu Leu Tyr Asn  
 325 330 335  
 Asn Asn Ser Val Pro Ser Tyr Pro Pro Pro Asn Pro Met Phe Thr Gly  
 340 345 350  
 Ser Thr Ser Gly Ala Ser Gly Val Lys Lys Lys Glu Ser Gly Gly Gly  
 355 360 365  
 Gly Ser Gly Gly Gly Val Gly Val Gly Gly Gln Asn Lys Glu Met Asn  
 370 375 380  
 Met Phe Val Trp Ser Ser Ser Ala Ser Pro Val Ser Glu Ala Asn Ala  
 385 390 395 400  
 Lys Asn Ala Met Thr Arg Gly Ser Ser Thr Asp Val Ser Thr Asp Pro  
 405 410 415  
 Lys Val Ser Ile Pro Pro His Asp Asn Leu Ala Thr Lys Ala Met Gln  
 420 425 430  
 Asn Leu Ile Glu Asn Met Ser Pro Gly Arg Lys Gly His Val Glu Met  
 435 440 445



Asp Gln Asp Gly Asn Asn Gly Gly Lys Ser Pro Tyr Met Gly Lys Lys  
 450 455 460  
 Gly Ser Asp Val Glu Asp Gly Gly Pro Gly Pro Arg Lys Gln Gln Met  
 465 470 475 480  
 Pro Pro Ala Ser Val Met Thr Arg Leu Ile Leu Ile Met Val Trp Arg  
 485 490 495  
 Lys Leu Ile Arg Asn Pro Asn Thr Tyr Ser Ser Leu Phe Gly Leu Ala  
 500 505 510  
 Trp Ser Leu Val Ser Phe Lys Trp Asn Ile Lys Met Pro Thr Ile Met  
 515 520 525  
 Ser Gly Ser Ile Ser Ile Leu Ser Asp Ala Gly Leu Gly Met Ala Met  
 530 535 540  
 Phe Ser Leu Gly Leu Phe Met Ala Leu Gln Pro Lys Ile Ile Ala Cys  
 545 550 555 560  
 Gly Lys Ser Val Ala Gly Phe Ala Met Ala Val Arg Phe Leu Thr Gly  
 565 570 575  
 Pro Ala Val Ile Ala Ala Thr Ser Ile Ala Ile Gly Ile Arg Gly Asp  
 580 585 590  
 Leu Leu His Ile Ala Ile Val Gln Ala Ala Leu Pro Gln Gly Ile Val  
 595 600 605  
 Pro Phe Val Phe Ala Lys Glu Tyr Asn Val His Pro Asp Ile Leu Ser  
 610 615 620  
 Thr Ala Val Ile Phe Gly Met Leu Val Ala Leu Pro Val Thr Val Leu  
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<210> 44  
 <211> 622  
 <212> PRT  
 <213> Arabidopsis thaliana

<400> 44  
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 35 40 45  
 Phe Ala Val Pro Leu Leu Ser Phe His Phe Ile Ala Ala Asn Asn Pro  
 50 55 60  
 Tyr Ala Met Asn Leu Arg Phe Leu Ala Ala Asp Ser Leu Gln Lys Val  
 65 70 75 80

Ile Val Leu Ser Leu Leu Phe Leu Trp Cys Lys Leu Ser Arg Asn Gly  
 85 90 95  
 Ser Leu Asp Trp Thr Ile Thr Leu Phe Ser Leu Ser Thr Leu Pro Asn  
 100 105 110  
 Thr Leu Val Met Gly Ile Pro Leu Leu Lys Gly Met Tyr Gly Asn Phe  
 115 120 125  
 Ser Gly Asp Leu Met Val Gln Ile Val Val Leu Gln Cys Ile Ile Trp  
 130 135 140  
 Tyr Ile Leu Met Leu Phe Leu Phe Glu Tyr Arg Gly Ala Lys Leu Leu  
 145 150 155 160  
 Ile Ser Glu Gln Phe Pro Asp Thr Ala Gly Ser Ile Val Ser Ile His  
 165 170 175  
 Val Asp Ser Asp Ile Met Ser Leu Asp Gly Arg Gln Pro Leu Glu Thr  
 180 185 190  
 Glu Ala Glu Ile Lys Glu Asp Gly Lys Leu His Val Thr Val Arg Arg  
 195 200 205  
 Ser Asn Ala Ser Arg Ser Asp Ile Tyr Ser Arg Arg Ser Gln Gly Leu  
 210 215 220  
 Ser Ala Thr Pro Arg Pro Ser Asn Leu Thr Asn Ala Glu Ile Tyr Ser  
 225 230 235 240  
 Leu Gln Ser Ser Arg Asn Pro Thr Pro Arg Gly Ser Ser Phe Asn His  
 245 250 255  
 Thr Asp Phe Tyr Ser Met Met Ala Ser Gly Gly Gly Arg Asn Ser Asn  
 260 265 270  
 Phe Gly Pro Gly Glu Ala Val Phe Gly Ser Lys Gly Pro Thr Pro Arg  
 275 280 285  
 Pro Ser Asn Tyr Glu Glu Asp Gly Gly Pro Ala Lys Pro Thr Ala Ala  
 290 295 300  
 Gly Thr Ala Ala Gly Ala Gly Arg Phe His Tyr Gln Ser Gly Gly Ser  
 305 310 315 320  
 Gly Gly Gly Gly Gly Ala His Tyr Pro Ala Pro Asn Pro Gly Met Phe  
 325 330 335  
 Ser Pro Asn Thr Gly Gly Gly Gly Gly Thr Ala Ala Lys Gly Asn Ala  
 340 345 350  
 Pro Val Val Gly Gly Lys Arg Gln Asp Gly Asn Gly Arg Asp Leu His  
 355 360 365  
 Met Phe Val Trp Ser Ser Ser Ala Ser Pro Val Ser Asp Val Phe Gly  
 370 375 380  
 Gly Gly Gly Gly Asn His His Ala Asp Tyr Ser Thr Ala Thr Asn Asp  
 385 390 395 400

His Gln Lys Asp Val Lys Ile Ser Val Pro Gln Gly Asn Ser Asn Asp  
 405 410 415  
 Asn Gln Tyr Val Glu Arg Glu Glu Phe Ser Phe Gly Asn Lys Asp Asp  
 420 425 430  
 Asp Ser Lys Val Leu Ala Thr Asp Gly Gly Asn Asn Ile Ser Asn Lys  
 435 440 445  
 Thr Thr Gln Ala Lys Val Met Pro Pro Thr Ser Val Met Thr Arg Leu  
 450 455 460  
 Ile Leu Ile Met Val Trp Arg Lys Leu Ile Arg Asn Pro Asn Ser Tyr  
 465 470 475 480  
 Ser Ser Leu Phe Gly Ile Thr Trp Ser Leu Ile Ser Phe Lys Trp Asn  
 485 490 495  
 Ile Glu Met Pro Ala Leu Ile Ala Lys Ser Ile Ser Ile Leu Ser Asp  
 500 505 510  
 Ala Gly Leu Gly Met Ala Met Phe Ser Leu Gly Leu Phe Met Ala Leu  
 515 520 525  
 Asn Pro Arg Ile Ile Ala Cys Gly Asn Arg Arg Ala Ala Phe Ala Ala  
 530 535 540  
 Ala Met Arg Phe Val Val Gly Pro Ala Val Met Leu Val Ala Ser Tyr  
 545 550 555 560  
 Ala Val Gly Leu Arg Gly Val Leu Leu His Val Ala Ile Ile Gln Ala  
 565 570 575  
 Ala Leu Pro Gln Gly Ile Val Pro Phe Val Phe Ala Lys Glu Tyr Asn  
 580 585 590  
 Val His Pro Asp Ile Leu Ser Thr Ala Val Ile Phe Gly Met Leu Ile  
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 Ala Leu Pro Ile Thr Leu Leu Tyr Tyr Ile Leu Leu Gly Leu  
 610 615 620

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 <211> 425  
 <212> DNA  
 <213> Triticum aestivum

<400> 45  
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 aggaggtcgg gcaagatgat cacgggcacg gacttctacc acgtgatgac ggcggtggtg 180  
 ccgctgtacg tggccatgat cctcgccctac ggctccgtca agtggtgggg catcttcacg 240  
 ccggaccagt gctccgggat caaccgcttc gtcgcgtct tgcgcgtgcc gtcctctctc 300  
 ttccacttca tctccaccaa caacccttac accatgaacc tgcgcttcat cgccgccgac 360  
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 ggcag 425

<210> 46  
 <211> 96

&lt;212&gt; PRT

&lt;213&gt; Triticum aestivum

&lt;400&gt; 46

Met Ile Thr Gly Thr Asp Phe Tyr His Val Met Thr Ala Val Val Pro  
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Leu Tyr Val Ala Met Ile Leu Ala Tyr Gly Ser Val Lys Trp Trp Gly  
 20 25 30

Ile Phe Thr Pro Asp Gln Cys Ser Gly Ile Asn Arg Phe Val Ala Leu  
 35 40 45

Phe Ala Val Pro Leu Leu Ser Phe His Phe Ile Ser Thr Asn Asn Pro  
 50 55 60

Tyr Thr Met Asn Leu Arg Phe Ile Ala Ala Asp Thr Leu Gln Lys Leu  
 65 70 75 80

Met Met Leu Ala Met Leu Thr Ala Trp Ser His Leu Ser Arg Arg Gly  
 85 90 95

&lt;210&gt; 47

&lt;211&gt; 855

&lt;212&gt; DNA

&lt;213&gt; Zea mays

&lt;400&gt; 47

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 ggctgcctcg agtggaccat cacgctcttc tccctgtcga cgctgccc aa cacgctgggtg 120  
 atgggcatcc cgctgctcaa gggcatgtac ggcgacttct ccggcagcct catgggtgcag 180  
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 gtgggtggacc ccgacgtggt gtcgctggac gggcgcaacg acgccatcga gacggaggcc 360  
 gaggtgaagg aggacggcaa gatacacgtc accgtgcggc gctccaacgc gtcgcgctcg 420  
 gacatctact cccggcggtc catgggggtt tccagcacca cgccgcggcc cagcaacctg 480  
 accaacgccg agatctactc gctgcagtcg tcgaggaacc ccacgccgcg gggctccagc 540  
 ttcaaccaca ccgacttcta ctccatggtc ggccgcagct ccaacttcgc cgccggggac 600  
 gcgttcggcc tgcgcacggg cgccacgccc aggcggtcca actacgagga ggacccgcag 660  
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 gccaaaggcc tcaagaaggc ggccaatggg caggccaagg gcgaggacgg caaggaccta 780  
 cacatgttcg tgtggagctc cagcgcgtcg cccgtgtccg acgtgttcg caatggcgcc 840  
 gccgagtaca acgac 855

&lt;210&gt; 48

&lt;211&gt; 285

&lt;212&gt; PRT

&lt;213&gt; Zea mays

&lt;400&gt; 48

Pro Arg Val Arg Leu Ile Val Leu Ala Leu Leu Thr Ala Trp Ser Tyr  
 1 5 10 15

Leu Ser Arg Arg Gly Cys Leu Glu Trp Thr Ile Thr Leu Phe Ser Leu  
 20 25 30

Ser Thr Leu Pro Asn Thr Leu Val Met Gly Ile Pro Leu Leu Lys Gly  
 35 40 45

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PCT/US00/12061

Met	Tyr	Gly	Asp	Phe	Ser	Gly	Ser	Leu	Met	Val	Gln	Ile	Val	Val	Leu	
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Gln	Cys	Ile	Ile	Trp	Tyr	Thr	Leu	Met	Leu	Phe	Met	Phe	Glu	Tyr	Arg	
65					70					75					80	
Gly	Ala	Arg	Ile	Leu	Ile	Thr	Glu	Gln	Phe	Pro	Asp	Thr	Ala	Gly	Ala	
				85					90					95		
Ile	Ala	Ser	Ile	Val	Val	Asp	Pro	Asp	Val	Val	Ser	Leu	Asp	Gly	Arg	
			100					105					110			
Asn	Asp	Ala	Ile	Glu	Thr	Glu	Ala	Glu	Val	Lys	Glu	Asp	Gly	Lys	Ile	
		115					120					125				
His	Val	Thr	Val	Arg	Arg	Ser	Asn	Ala	Ser	Arg	Ser	Asp	Ile	Tyr	Ser	
	130					135					140					
Arg	Arg	Ser	Met	Gly	Phe	Ser	Ser	Thr	Thr	Pro	Arg	Pro	Ser	Asn	Leu	
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Thr	Asn	Ala	Glu	Ile	Tyr	Ser	Leu	Gln	Ser	Ser	Arg	Asn	Pro	Thr	Pro	
			165					170						175		
Arg	Gly	Ser	Ser	Phe	Asn	His	Thr	Asp	Phe	Tyr	Ser	Met	Val	Gly	Arg	
			180					185					190			
Ser	Ser	Asn	Phe	Ala	Ala	Gly	Asp	Ala	Phe	Gly	Leu	Arg	Thr	Gly	Ala	
		195					200					205				
Thr	Pro	Arg	Pro	Ser	Asn	Tyr	Glu	Glu	Asp	Pro	Gln	Gly	Lys	Ala	Asn	
	210					215					220					
Lys	Tyr	Gly	Gln	Tyr	Pro	Ala	Pro	Asn	Pro	Ala	Met	Ala	Ala	Gln	Pro	
225					230					235					240	
Ala	Lys	Gly	Leu	Lys	Lys	Ala	Ala	Asn	Gly	Gln	Ala	Lys	Gly	Glu	Asp	
				245					250					255		
Gly	Lys	Asp	Leu	His	Met	Phe	Val	Trp	Ser	Ser	Ser	Ala	Ser	Pro	Val	
			260					265					270			
Ser	Asp	Val	Phe	Gly	Asn	Gly	Ala	Ala	Glu	Tyr	Asn	Asp				
		275					280					285				